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# THE PROBLEM OF MARS

By W. H. Pickering

In the April number of these Publications, Professor Campbell referred very kindly to my work on this planet, and by means of quotations in parallel columns points out most clearly the divergence in the observations and expressed opinions between the late Dr. Lowell and myself. With regard to the important points to which he calls attention, it is, I believe, truly the fact, as he says, that they are "just about as different as two observers could make them." On many other points, however, we were agreed. Fortunately there are at the present time nearly half a dozen very skilful observers of *Mars*, and I should hesitate long before claiming that my drawings were any better than theirs, even if I believe I occupy a rather more favorable location than some of them. Those who are interested in *Mars* will find that the work of these observers is very fully represented by drawings published in my *Reports on Mars*, Nos. 8 and 17, and, as far as I am aware, there is really only one modern first class expert observer of the planet whose work either has not appeared there or in *Report* No. 21, which last it is expected will be published before the end of this year. While there are necessarily points of difference between the drawings of so many different observers, such as variations in size and position of some of the important features, yet there can be no question that on all the main points of fact raised by Professor Campbell, there is now substantial agreement among them, and the reader may find his own answer to the questions asked in the drawings themselves.

To my mind, however, if I may make the suggestion, the last sentence but one of Professor Campbell's paper is a little too pessimistic, and, if I may say so, is rather unnecessarily discouraging. The would-be observer of *Mars*, it is true, must certainly have some conception of drawing. That is to say, he must be able to make a sketch of, let us say, a configuration of stars in the heavens, that will bear at least a recognizable resemblance to the original. He must also have fairly good eyesight. We used at one time to hear something of the wonderful eyesight and the months of practice necessary to enable an observer to see the canals of *Mars*. That is all nonsense. Given the proper conditions, almost anyone can see the coarser canals at the first glance, and after five or ten minutes study, will see most of the fainter ones. There is nothing superhuman about it at all. There are of course such things as poor eyes and good eyes, but good eyes are all just about alike, and there is very little difference between them. If one can see the *Mare Frigoris* on the Moon with the naked eye or thru spectacles, one can see the canals of *Mars*. The main differences in the drawings of *Mars* made by various observers, I take it, is not caused by differences in what they see—we all see alike,—but rather by differences in the manner of representing what they see.

Having now considered the observer, the next most important thing to be mentioned is the climate. By personal experience I know that that found in the southwestern states is plenty good enough for the study of *Mars*. Even in New England some canals can occasionally be seen. There is a well known test object for the quality of the seeing—the double canal in the interior of the lunar crater *Aristillus*. It has been seen hitherto in Jamaica, at Flagstaff, and at Setif in Algeria. It is said also to have been seen in Florence, Italy. I believe there is no reason why it should not be occasionally visible from the Pacific Coast. Lastly we must consider the instrument. Whether refractor or reflector, it should not be extremely large, unless the seeing is superlatively good, nor yet too small. On one point Dr. Lowell, M. Desloges, Mr. Phillips, and myself were all agreed, and we reached the same conclusion independently—that was that the better the seeing, the larger the aperture that could be used to advantage for the study of minute planetary detail, and conversely, the worse the seeing, the smaller should be the aperture employed. On an average night finer planetary detail can certainly be seen with an aperture of 12 inches than with one of 36 inches. I have seen some of the coarser canals clearly in Jamaica with a 3-inch aperture. By "seen" I do not mean occasionally glimpsed for a second or two, I mean held steadily and continuously as long as I chose to look at them. Surprisingly good work has been done by Dr. Lau in Denmark with an aperture of a little less than four inches. It is probable that nothing of importance has yet been discovered on *Mars* that cannot be well seen with a good 12-inch reflector, properly located.

Therefore if a would-be observer is interested in *Mars*, my advice to him is to get a small telescope and go ahead. Now that we are beginning to know what to look for, it is surprising what interesting changes are constantly occurring, and how readily they can be seen even by the wholly inexperienced amateur, provided he will put his mind to it, and observe continuously night after night.

Mandeville, Jamaica, B. W. I.,
August 19, 1918.